

RTCA Special Committee 186, Working Group 5

ADS-B UAT MOPS

Meeting #25

**Verification of Call Sign Identification
In Response to Action Item 24-06**

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SUMMARY

This paper proposes a Verification Procedure for the requirements changes accepted last meeting for making the transmission of the “Flight Plan ID” (aka Mode A code) a configuration item—anticipating the eventual day that Mode A code is no longer used.

2.2.1.1.1.12.4.4.5.4.15 **Verification of Call Sign Identification (CSID) Flag** (§Error!
Reference source not found.)

Purpose/Introduction:

The requirements of this section **shall** apply only when the UAT transmitter is configured for the CSID Logic ENABLED state as described in 2.2.4.5.4.15 “**Call Sign Identification Flag**”. The Call Sign Identification (CSID) Flag in the Mode Status Element is a one-bit flag (bit 7 of byte 27) which is used to identify the contents of the “CALL SIGN//FLIGHT PLAN ID” field. When the CSID Flag is set to the value ONE (1), then the “CALL SIGN//FLIGHT PLAN ID” field **shall** contain the Call Sign. When the CSID Flag is set to the value ZERO (0), then the “CALL SIGN//FLIGHT PLAN ID” field **shall** contain the Flight Plan ID.

When the “Receiving ATC Services” input is FALSE, the CSID Flag **shall** always contain the value of ONE (1).

While the “Receiving ATC Services” input is TRUE, the CSID Flag **shall** alternate between the TRUE and FALSE values on each subsequent transmission of an ADS-B Message containing the MODE STATUS element.

Measurement Procedure:

Step 1: Call Sign Reporting Verification

Set up the ADS-B Transmitting Subsystem to transmit ADS-B Messages and ensure the CSID Logic Configuration Item is set to ENABLED. Provide the “Receiving ATC Services” Flag Input to the UUT set to FALSE. Input a “Call Sign” consisting of the character sequence “ABCDEF”. Input a “Flight Plan ID” consisting of the 4 character sequence “3562.” Input an Emitter Category value of ZERO. Verify that all Transmitted Messages of Payload Type Codes of ONE (1) or THREE (3), depending upon the equipment class, contain the Call Sign Identification (CSID) Flag, bit 7 of byte 27, set to ONE (1). Verify that CALL SIGN//FLIGHT PLAN ID field contains the following values:

Message Byte 18 = 0000 0001 Binary
Message Byte 19 = 1001 1011 Binary
Message Byte 20 = 0100 1101 Binary
Message Byte 21 = 0001 0110 Binary
Message Byte 22 = 0110 0011 Binary
Message Byte 23 = 1000 0100 Binary

Step 2: Flight Plan ID Reporting Verification

Set up the ADS-B Transmitting Subsystem to transmit ADS-B Messages. Provide the “Receiving ATC Services” Flag Input to the UUT set to TRUE. Input a “Call Sign” consisting of the character sequence “ABCDEF”. Input a “Flight Plan ID” consisting of the 4 character sequence “3562.” Input an Emitter Category value of ZERO. Verify that Transmitted Messages of Payload Type Codes of ONE (1) or THREE (3), depending upon the equipment class, alternate the contents of the Call Sign Identification (CSID) Flag, bit 7 of byte 27. Verify that when transmitting Payload Type ONE (1) or THREE (3), the contents of the CALL SIGN/FLIGHT PLAN ID field reflects the proper encoding for the transmitted CSID Flag value. When the CSID Flag is ONE (1), verify that the contents of the CALL SIGN/FLIGHT PLAN ID field corresponds to the values as depicted in Step 1 above. When the CSID Flag is ZERO (0), verify that the contents of the CALL SIGN/FLIGHT PLAN ID field corresponds to the following values:

Message Byte 18 = 0000 0000 Binary
Message Byte 19 = 0111 1101 Binary
Message Byte 20 = 0010 0101 Binary
Message Byte 21 = 1111 0101 Binary
Message Byte 22 = 1110 1101 Binary
Message Byte 23 = 0010 1101 Binary

Step 3: Reverting to Call Sign Reporting Verification

Reset the “Receiving ATC Services” Flag Input to the UUT to FALSE. Verify that all Transmitted Messages of Payload Type Codes of ONE (1) or THREE (3), depending upon the equipment class, contain the Call Sign Identification (CSID) Flag, bit 7 of byte 27, set to ONE (1). Verify that the contents of the CALL SIGN/FLIGHT PLAN ID field correspond to the values as depicted in Step 1 above.

2.4.4.5.4.16 Verification of CSID Logic Configuration Item (§2.2.4.5.4.16)

Purpose/Introduction:

The UAT transmitting subsystem shall provide an installer configuration item that will place the UAT transmitting subsystem in one of two states:

-CSID Logic ENABLED: Causes the UAT transmitting subsystem to satisfy the requirements of 2.2.4.5.4.15 “Call Sign Identification (CSID) Flag”

-CSID Logic DISABLED: Causes the UAT transmitting subsystem to ignore the requirements of 2.2.4.5.4.15 “Call Sign Identification (CSID) Flag” with Call Sign ALWAYS encoded in the CALL SIGN field and with the CSID field ALWAYS encoded as ONE.

Measurement Procedure:

Step 1: Call Sign Reporting Verification

Set up the ADS-B Transmitting Subsystem to transmit ADS-B Messages and ensure the CSID Logic Configuration Item is set to DISABLED. Provide the “Receiving ATC Services” Flag Input to the UUT set to FALSE. Input a “Call Sign” consisting of the character sequence “ABCDEF”. Input a “Flight Plan ID” consisting of the 4 character sequence “3562.” Input an Emitter Category value of ZERO. Verify that all Transmitted Messages of Payload Type Codes of ONE (1) or THREE (3), depending upon the equipment class, contain the Call Sign Identification (CSID) Flag, bit 7 of byte 27, set to ONE (1). Verify that CALL SIGN/FLIGHT PLAN ID field contains the following values:

Message Byte 18 = 0000 0001 Binary

Message Byte 19 = 1001 1011 Binary

Message Byte 20 = 0100 1101 Binary

Message Byte 21 = 0001 0110 Binary

Message Byte 22 = 0110 0011 Binary

Message Byte 23 = 1000 0100 Binary

Step 2: Flight Plan ID Reporting Verification

Set up the ADS-B Transmitting Subsystem to transmit ADS-B Messages. Provide the “Receiving ATC Services” Flag Input to the UUT set to TRUE. Input a “Call Sign” consisting of the character sequence “ABCDEF”. Input a “Flight Plan ID” consisting of the 4 character sequence “3562.” Input an Emitter Category value of ZERO. Verify that all Transmitted Messages of Payload Type Codes of ONE (1) or THREE (3), depending upon the equipment class, contain the Call Sign Identification (CSID) Flag, bit 7 of byte 27, set to ONE . Verify that the contents of the CALL SIGN/FLIGHT PLAN ID field contains the values shown in Step 1 above.

Step 3: Reverting to Call Sign Reporting Verification

Reset the “Receiving ATC Services” Flag Input to the UUT to FALSE. Verify that all Transmitted Messages of Payload Type Codes of ONE (1) or THREE (3), depending upon the equipment class, contain the Call Sign Identification (CSID) Flag, bit 7 of byte 27, set to ONE (1). Verify that the contents of the CALL SIGN/FLIGHT PLAN ID field correspond to the values as depicted in Step 1 above.

2.2.1.1.1.22.4.4.5.4.17 Verification of Reserved Bits (§2.2.4.5.4.17/2.2.4.5.4.16)

Purpose/Introduction:

This Reserved Bits field is a 17-bit (bit 8 of byte 27 through bit 8 of byte 29) field that may be used in the future to indicate the capability of a participant to support engagement in various operations. This Reserved Bits field is reserved for future use and **shall** be set to ALL ZEROS.

Measurement Procedure:

Set up the ADS-B Transmitting Subsystem to transmit ADS-B Messages. Input a message and verify that bit 8 of byte 27 through bit 8 of byte 29 are set to ALL ZEROs.